

Remarks

Applicants respectfully request entry of the above amendment and reconsideration in view of the amendment and the following remarks.

The status of the application is as follows. Claims 18-37 are currently pending in the application. New independent claim 31 has been added by this amendment, and is a combination of previous versions of claims 18 and 22. Claims 32-37 depend from claim 31. No new matter is believed added.

The Examiner has rejected claims 18-21 under 35 U.S.C. §102(b) as allegedly being anticipated by US 4,105,468 to Geshner *et al.* (hereinafter, "Geshner"). The Examiner has rejected claim 21 under 35 USC. §103(a) as allegedly being unpatentable over Geshner in view of US 3,630,795 to Innokent Vorie (hereinafter, "Vorie"). The Examiner has rejected claims 22-25, 28 and 29 under 35 USC. §103(a) as allegedly being unpatentable over Geshner, as applied to claims 18-21 above, in view of US 4,370,197 to Abolafia *et al.* (hereinafter, "Abolafia"). The Examiner has rejected claims 22-25, 28 and 29 under 35 USC. §103(a) as allegedly being unpatentable over Geshner and Abolafia, in view of US 4,366,034 to Ricks *et al.* (hereinafter, "Ricks"). The Examiner has rejected claim 30 under 35 USC. §103(a) as allegedly being unpatentable over Geshner as applied to claims 18-21 above, in view of US 5,149,404 to Blonder *et al.* (hereinafter, "Blonder"). The Examiner has rejected claims 26 and 27 under 35 USC. §103(a) as allegedly being unpatentable over Geshner as applied to claims 18-21 above, in view of US 4,344,223 to Bulger *et al.* (hereinafter, "Bulger"). Applicants respectfully traverse the §102 and §103 rejections with the following arguments.

35 USC. §102

The Examiner has rejected claims 18-21 under 35 U.S.C. §102(b) as allegedly being anticipated by Geshner. Applicants respectfully contend that Geshner does not anticipate claim 18, because Geshner does not teach each and every feature of claim 18 as amended herein. For example, Geshner does not teach an electrical structure comprising "a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus, said apparatus further including an acid solution spray applicator." In contrast, Geshner is completely silent regarding the apparatus in which the method disclosed therein occurs.

Based on the preceding arguments, Applicants respectfully maintain that Geshner does not anticipate claim 18, and that claim 18 is in condition for allowance. Since claims 19-21 depend from claim 18, Applicants contend that claims 19-21 are likewise in condition for allowance.

35 USC. §103

The Examiner has rejected claim 21 under 35 USC. §103(a) as allegedly being unpatentable over Geshner in view of Vorie.

Applicants respectfully contend that claim 21 is not unpatentable over Geshner and Vorie, because Geshner and Vorie, taken alone or in combination, do not teach or suggest each and every feature of independent claim 18 from which claim 21 depends. For example, Geshner and Vorie do not teach or suggest, *inter alia*, "a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus." Rather, as noted *supra*,

Geshner does not disclose an apparatus in which the method disclosed therein occurs. Further, Vorie teaches away from the concept of a "conveyorized processing apparatus" when Vorie discloses that a "substrate 2 is held in place on the surface of fixture 3 by a vacuum developed inside chamber 4 of the fixture 3" (col. 2, lines 26-32).

Based on the preceding arguments, Applicants respectfully maintain that claim 18 is not unpatentable over Geshner and Vorie, and that claim 18 is in condition for allowance. Since claim 21 depends from claim 18, Applicants contend that claim 21 is likewise in condition for allowance.

The Examiner has rejected claims 22-25, 28 and 29 under 35 USC. §103(a) as allegedly being unpatentable over Geshner as applied to claims 18-21 above, in view of Abolafia.

Applicants respectfully contend that claims 22-25, 28 and 29 are not unpatentable over Geshner and Abolafia, because Geshner and Abolafia, taken alone or in combination, do not teach or suggest each and every feature of independent claim 18 from which claims 22-25, 28 and 29 depend. For example, Geshner and Abolafia do not teach or suggest, *inter alia*, "a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus." Rather, as noted *supra*, Geshner does not disclose an apparatus in which the method disclosed therein occurs. Similarly, Abolafia does not disclose an apparatus in which the method disclosed therein occurs.

Based on the preceding arguments, Applicants respectfully maintain that claim 18 is not unpatentable over Geshner and Abolafia, and that claim 18 is in condition for allowance. Since claims 22-25, 28 and 29 depend from claim 18, Applicants contend that claims 22-25, 28 and 29

are likewise in condition for allowance.

The Examiner has rejected claims 22-25, 28 and 29 under 35 USC. §103(a) as allegedly being unpatentable over Geshner and Abolafia in view of Ricks.

Applicants respectfully contend that claims 22-25, 28 and 29 are not unpatentable over Geshner and Abolafia in view of Ricks, because Geshner, Abolafia and Ricks, taken alone or in combination, do not teach or suggest each and every feature of independent claim 18 from which claims 22-25, 28 and 29 depend. For example, Geshner and Abolafia, as discussed *supra*, as well as Ricks, do not teach or suggest, *inter alia*, "a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus." Rather, as noted *supra*, Geshner and Abolafia do not disclose an apparatus in which the method disclosed therein occurs. Similarly, Ricks does not disclose an apparatus in which the method disclosed therein occurs. Further, Ricks teaches away from the instant invention, since Ricks is directed towards an electroplating process for depositing chromium onto a surface (*i.e.*, reverse etching), rather than etching chromium away from a surface. In any event, Ricks does not teach or suggest, *inter alia*, etching a chromium volume, and therefore the rejection based on Ricks is inapplicable to claim 22.

Regarding the feature of claim 22, "wherein said iron-comprising body includes steel," Applicants disagree with Examiner's assertion that it would be obvious to substitute an "iron-comprising body including steel" for an "iron-comprising body." The Examiner does not provide any support for this assertion that there are "inherent physical, electrical, and structural similarities and properties" of both materials. Rather, Applicants suggest that evidence can be

found to support the opposite view. Iron is an element, while steel is a variety of iron containing more carbon than wrought iron. Further, steel is generally known as a "hard, strong, durable malleable alloy of iron and carbon, usually containing between 0.2 and 1.5 percent carbon, often with other constituents such as manganese, chromium, nickel, molybdenum, copper, tungsten, cobalt, or silicon, depending on the desired alloy properties." (See, American Heritage Dictionary). Regarding electrical properties, the resistivity, for example, of steel, at 20°C, varies from about 60 to about 120 ohm-cm. The resistivity of iron at the same temperature is about 10 ohm-cm. (See, Handbook of Physics and Chemistry). Applicants respectfully submit, therefore, that there are sufficient differences between an "iron-comprising body including steel" and an "iron-comprising body" that their interchange or substitution would not be obvious.

Based on the preceding arguments, Applicants respectfully maintain that claim 18 is not unpatentable over Geshner and Abolafia in view of Ricks, and that claim 18 is in condition for allowance. Since claims 22-25, 28 and 29 depend from claim 18, Applicants contend that claims 22-25, 28 and 29 are likewise in condition for allowance.

The Examiner has rejected claim 30 under 35 USC. §103(a) as allegedly being unpatentable over Geshner as applied to claims 18-21 above, in view of Blonder.

Applicants respectfully contend that claim 30 is not unpatentable over Geshner in view of Blonder, because Geshner and Blonder, taken alone or in combination, do not teach or suggest each and every feature of independent claim 18 from which claim 30 depends. For example, Geshner, as discussed *supra*, does not teach or suggest, *inter alia*, "a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus."

Rather, as noted *supra*, Geshner does not disclose the apparatus in which the method disclosed therein occurs. Similarly, Blonder does not disclose a conveyorized processing apparatus in which the method disclosed therein occurs. Further, Blonder teaches away from the instant invention, since Blonder is directed towards an electromachining process which would be incompatible with an electroplating process.

Based on the preceding arguments, Applicants respectfully maintain that claim 18 is not unpatentable over Geshner in view of Blonder, and that claim 18 is in condition for allowance. Since claim 30 depends from claim 18, Applicants contend that claim 30 is likewise in condition for allowance.

The Examiner has rejected claims 26 and 27 under 35 USC. §103(a) as allegedly being unpatentable over Geshner as applied to claims 18-21 above, in view of Bulger.

Applicants respectfully contend that claims 26 and 27 are not unpatentable over Geshner in view of Bulger, because Geshner and Bulger, taken alone or in combination, do not teach or suggest each and every feature of independent claim 18 from which claims 26 and 27 depend. For example, Geshner, as discussed *supra*, does not teach or suggest, *inter alia*, "a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus." Rather, as noted *supra*, Geshner does not disclose the apparatus in which the method disclosed therein occurs. Similarly, Bulger does not disclose a conveyorized processing apparatus in which the method disclosed therein occurs.

Based on the preceding arguments, Applicants respectfully maintain that claim 18 is not unpatentable over Geshner in view of Bulger, and that claim 18 is in condition for allowance.

Since claims 26 and 27 depend from claim 18, Applicants contend that claims 26 and 27 are likewise in condition for allowance.

Note that new claim 31 is essentially the same as claim 22 prior to the present amendment of claim 18, and that the arguments presented *supra* in conjunction with the inclusion of steel in claim 22 also apply to new claim 31. Accordingly, Applicants submit that new claim 31, and new claims 32-37 which depend from claim 31, are in condition for allowance.

Conclusion

Accordingly, based on the preceding arguments, Applicants respectfully submit that claims 18-37, and the entire application, are in condition for allowance and therefore request favorable action. However, should the Examiner believe anything further is necessary in order to place the application in better condition for allowance, or if the Examiner believes that a telephone interview would be advantageous to resolve the issues presented, the Examiner is invited to contact the Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

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APPENDIX A**Serial No.: 09/670,411****Identification of Amended Material****In the Claims:**

Please amend claim 18 and 26, and add new claims 31-37, as follows.

1 18. (Amended) An electrical structure, comprising:
2 a chromium volume, wherein said chromium volume is operationally positioned in a
3 conveyorized processing apparatus, said apparatus further including a spray applicator for
4 dispensing an acid solution;
5 an iron-comprising body in continuous electrical contact with the chromium volume; and
6 said an acid solution in continuous contact with both the chromium volume and the iron-
7 comprising body, wherein the chromium volume body is being etched at an etch rate by said acid
8 solution.

1 26. (Twice Amended) An electrical structure, comprising:
2 a chromium volume, wherein said chromium volume is operationally positioned in a
3 conveyorized processing apparatus, said apparatus further including a spray applicator for
4 dispensing an acid solution;
5 an iron-comprising body in continuous electrical contact with the chromium volume; and
6 said an acid solution in continuous contact with both the chromium volume and the iron-

7 comprising body, wherein the chromium volume body is being etched at an etch rate by said acid
8 solution; and

9 a layer of conductive metal, wherein the chromium volume includes a layer of chromium,
10 wherein the layer of conductive metal is on the layer of chromium, wherein the conductive metal
11 includes an opening extending through its thickness, wherein the opening exposes the layer of
12 chromium, wherein the iron-comprising body is in continuous electrical contact with the
13 chromium volume, and wherein the acid solution is in contact with both the iron-comprising
14 body and the chromium volume within the opening.

1 31. (New) An electrical structure, comprising:

2 a chromium volume;
3 an iron-comprising body in continuous electrical contact with the chromium volume,
4 wherein the iron comprising body includes steel; and
5 an acid solution in continuous contact with both the chromium volume and the iron-
6 comprising body, wherein the chromium volume is being etched at an etch rate.

1 32. (New) The electrical structure of claim 31, wherein the electrical structure further
2 comprises a chromium oxide layer on the chromium volume.

1 33. (New) The electrical structure of claim 31, further comprising a layer of conductive
2 metal, wherein the chromium volume includes a layer of chromium, and wherein the layer of
3 chromium is on the layer of conductive metal.

1 34. (New) The electrical structure of claim 33, wherein the acid solution is not in contact with
2 the layer of conductive metal.

1 35. (New) The electrical structure of claim 34, wherein the acid solution includes
2 hydrochloric acid, and wherein the layer of conductive metal includes a metal selected from the
3 group consisting of copper, aluminum, nickel, silver, and gold.

1 36. (New) The electrical structure of claim 31, wherein the chromium volume includes
2 metallic chromium, wherein the acid solution includes hydrochloric acid, wherein a temperature
3 (T) and a molarity (M) of the hydrochloric acid is within a triangular space defined by (T,M)
4 points of (21 °C, 2.4 M), (52 °C, 2.4 M), and (52 °C, 1.2 M), and wherein the etch rate is at least
5 about 5 Å/second.

1 37. (New) The electrical structure of claim 31, further comprising a flouropolymer dielectric
2 volume bonded to said chromium volume.

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Applicant: Accelerated Etching of Chromium

Title: Accelerated Etching of Chromium

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